

Privately Insured Maryland Children with Conditions Related to Being Overweight: Characteristics, Services, and Spending

Purpose

Data from recent National Health and Nutrition Examination Surveys show substantial increases in the number of overweight and obese adults.¹ Data from 1999–2002 reveal that 65 percent of adults nationwide were overweight and 31 percent were obese. While the term “obese” is not defined for children, the number of overweight children has also increased in recent years.² During 1999–2002, about 16 percent of children and adolescents, age 6–19 years, were overweight.³ Obesity and medical conditions related to obesity, such as diabetes and hypertension, are among medical conditions that account for increases in spending on medical care.⁴ While the focus of numerous studies of the impacts of obesity has been on adults, obesity prevention in children is of increasing interest to medical professionals and policy makers.⁵

Payments by private insurers in Maryland for children with conditions related to being overweight are presented in this *Spotlight*. Unadjusted (“raw”) estimates are presented, as well as estimates adjusted for age, sex, other health conditions, and differences across insurance plans.

Methods

Data from private insurance claim records in the Maryland Medical Care Data Base (MCDB)⁶ were used to create a person-level analysis file of children ages 6–19 with private insurance who received at least one practitioner service during 2003. Whether a child has a chronic condition, such as excess body weight, is a data item that is identifiable only if the condition appears in a child’s insurance claim record as a diagnosis code. Diagnoses are coded using the ICD-9-CM coding system. Because the only diagnostic codes for being overweight are for “obesity” or “morbid obesity,” the coding system cannot be used to directly identify the “lesser” condition of overweight. Instead, a child was identified as “possibly overweight” if the child had one or more conditions related to obesity.⁷ Conditions included dyslipidemia, essential hypertension, certain orthopedic conditions, diabetes mellitus, and others.⁸ Overweight-related conditions were identified by scanning

each child’s records for corresponding ICD-9 codes. Health care payments for practitioner services were cumulated only for children covered by a non-HMO plan, using data from each child’s insurance claim records, in total and for the overweight-related conditions.

A statistical model was developed to predict total, annual health care professional payments (paid by private insurers *and* out-of-pocket) per child represented in the MCDB. The model distinguishes between “possibly overweight” and other children. Children with an ICD-9 code indicating obesity were grouped with the possibly overweight for purposes of this analysis.⁹ Other predictors in the model control for age, sex, and medical problems other than those used to identify possibly overweight children. The model controls for possible differences across insurers, e.g., systematic differences in payments related to how plans specify cost-sharing and geographic location. The model was specified to examine whether the relationship between payment and being overweight varied with the child’s age. The absence of capitated primary care data for children covered by HMOs makes assessing differences in spending between the two populations difficult. Since this study represents an initial effort, the HMO-covered population is not represented in the statistical model.

Findings

About 0.6 percent of privately insured children who used health care during 2003 were identified as obese, and another 1.8 percent had at least one condition that identified them as possibly overweight (Table 1). These estimates are probably underestimates, as 16 percent of children nationwide are believed to be overweight.¹⁰ Note that these estimates are conditional on some use of medical care (children who did not use a practitioner service during the year are not identified in the MCDB), and do not reflect experiences of the uninsured and children without private insurance who were enrolled in Medicaid.

Table 1: Number of Privately Insured Children Ages 6–19 Represented in the MCDB and Percent Obese and Possibly Overweight by Type of Plan, 2003

	HMO	Non-HMO	Total
Total number of children	238,220	283,840	522,060
Percent obese	0.7	0.4	0.6
Percent “possibly overweight”	1.6	2.0	1.8

Among children in Maryland who were identified as obese or possibly overweight, about one-third had dyslipidemia, a condition marked by abnormal concentrations of lipids or lipoproteins in the blood. Prevalence rates of this condition ranged from 27 percent under HMO coverage to 41 percent under non-HMO plans (Table 2). About one quarter of this group was identified as obese, based on a review of ICD-9 codes entered in insurance claim records. Fourteen percent of the obese and possibly overweight population were hypertensive.

Table 2: Overweight-Related Conditions Among Obese and Possibly Overweight Children Ages 6–19 Represented in the MCDB, Total and by Type of Plan, 2003

Condition	Percent with Condition		
	HMO	Non-HMO	Total
Dyslipidemia	26.8	40.5	34.3
Obesity	32.0	17.9	24.0
Essential Hypertension	13.6	14.4	14.1
Orthopedic Conditions	11.2	13.2	12.4
Diabetes Mellitus	8.6	7.2	7.7
Sleep Apnea	6.9	7.5	7.3
Gallstones	2.4	1.7	2.0
Other	7.8	5.3	6.5

Notes: Approximately 522,060 children between the ages of 6 and 19 years and covered by private insurance are represented in the MCDB. About 2.4 percent were identified with one or more of the obesity and overweight-related conditions listed above. Percents are of those children *with obesity or an overweight-related condition*. Only those conditions affecting at least 2 percent of these children are listed separately; percents in the “other” row have at least one condition in at least one of the following categories: paronychia, hyperinsulinemia, polycystic ovarian syndrome, pseudotumor cerebri, acanthosis nigricans, glucose abnormal/impaired. See Appendix for a complete condition listing.

Obese and possibly overweight children with non-HMO coverage are compared to other children with private, non-HMO coverage in Table 3. The obese-overweight group is somewhat older—three-quarters of this population are between the ages of 12 and 19, whereas only 58 percent of other children are in this age category. Males make up 55 percent of the other group, whereas males are 50 percent of the obese-overweight group.

Annual per person practitioner health care payments, including payments by insurers and out-of-pocket payments, for children in the obese-overweight group were \$880, unadjusted for differences in age, sex, plan, and other health conditions (Table 3). This payment is almost twice as large as the unadjusted average annual payment for other children, \$456. Even though payments for treatment of obese and possibly overweight children significantly exceed payments on behalf of other children, only 18 percent of total (unadjusted) payments were attributable directly to conditions used to identify this population. Treatment for dyslipidemia, the most costly of conditions related to being overweight, accounted for 5 percent of total payments. Treatment for hypertension and orthopedic conditions each accounted for 4 percent of payments to the possibly overweight on average.

Table 3: Data on Children Ages 6–19 Covered by Private, Non-HMO Plans Who Have and Do Not Have Conditions Related to Being Overweight, 2003

	Obese and “Possibly Overweight” Children	Other Children
Age, years	14	13
Percent age, 6–11 years	25	42
Percent age, 12–19 years	75	58
Percent male	50	55
Total payments for practitioner health care services	\$ 880	\$ 456
Percent of payments paid by insurer	78	76
Percent of payments for treatment of overweight-related conditions	18	—
Percent of payments for treatment of dyslipidemia	5	—
Percent of payments for treatment of morbid obesity	1	—
Percent of payments for treatment of essential hypertension	4	—
Percent of payments for treatment of orthopedic conditions	4	—
Percent of payments for treatment of other overweight-related conditions	4	—

Predicted spending on health care practitioner services for non-HMO children are displayed in Table 4. Not surprisingly, predictions of expected payments on behalf of the possibly overweight (including children identified as obese) are considerably larger than for other children. Controlling for differences due to sex, insurer, and other medical conditions, predicted annual payments to practitioners are \$722 for children between the ages of 12 and 19 with an overweight-related condition, and \$402 for children of the same age but

without such a condition—a difference of 80 percent (relative to payments for children without an overweight-related condition). Among children age 6–11, predicted payments for those possibly overweight exceed payments to other children by 66 percent (\$627 versus \$377).

Discussion

Estimates based on health care practitioner insurance claim records from the MCDB contribute to an understanding of the importance of treatment for conditions related to being overweight. Overweight-related conditions have had significant, direct effects on insurance payments for children. Payments for overweight children exceed payments for others by 66 percent for children age 6–11, and by 80 percent for children age 12–19. These percent impacts are more severe than have been observed for adults. Per person expenditure estimates for overweight and obese adults in 2001 were \$3,247 and \$3,976, respectively, which were in excess of expenditures for normal-weight adults (\$2,907) by 12 and 37 percent, respectively.¹¹

Table 4: Predicted Annual Health Care Professional Payments for Possibly Overweight Children and Other Children Covered by Private, Non-HMO Insurance in the MCDB, 2003

	Annual Payment, 2003		
	Age 6–11	Age 12–19	All Ages
Possibly overweight children	\$ 627	\$ 722	\$ 691
Other children	377	402	400
All children	389	420	407

Notes: Payments are predicted values from a regression model used to control for differences in sex, insurer, and other medical diagnoses. Age was interacted with the presence of an overweight-related condition, and is reflected in predicted payments.

These results are subject to several caveats. First, estimated spending reflects services provided by physicians and other health care professionals. Hospital services and prescription drugs constitute a significant share of total spending for some patients, but these services are not included in the estimate. Second, it is not known for certain that children characterized as possibly overweight are representative of overweight children in Maryland. As noted above, only 2.4 percent of privately insured children in Maryland were identified as obese or possibly overweight, whereas 16 percent of children nationwide are believed to be overweight. One explanation for this difference is that the ICD-9-based approach used to identify the “possibly overweight” children for this analysis only identifies children with the most severe weight-related problems. In this case, the

estimates above may overstate the expenses associated with treating overweight children. However, some of the “possibly overweight” children likely fall in the “other children” group, because these individuals do not suffer an overweight-related condition and are not diagnosed as obese.¹² If this is true, expenses for the “other children” group may be overstated. The lack of treatment codes for an overweight condition, not associated with a complication, limits our ability to identify the affected population. This study limitation highlights a general lack of treatment codes available to physicians for managing weight problems at early stages when the costs of controlling the condition are lowest.¹³

Lastly, it should be emphasized that predictions presented here are for the non-HMO group of privately insured only, and do not reflect experiences of children with other types of coverage (e.g., the privately insured HMO group with a larger percentage of obese children, and children covered by Medicaid).

Additional study over time and including different populations could help with efforts to further understand drivers of health care costs related to overweight.

¹ National Center for Health Statistics (NCHS). *Health, United States, 2004 with Chartbook on Trends in the Health of Americans*. NCHS: Hyattsville, MD, 2004, pp. 36–37.

² Overweight in children is defined as at or above the 95th percentile of the Body Mass Index (BMI)-for-age. Children at or above the 85th percentile and below the 95th percentile are considered at risk for being overweight. The BMI-for-age is constructed gender-specific for children age 2–20 by the Centers for Disease Control and Prevention. A description is accessible at www.cdc.gov/nccdphp/dnpa/bmi/bmi-for-age.htm.

³ NCHS, *Ibid.*

⁴ Thorpe, KE, Florence, CS, Joski, P, “Which Medical Conditions Account for the Rise in Health Care Spending?” *Health Affairs*, Web Exclusive (August 2004), W4-437 – W4-445; Thorpe, KE, et al., “The Impact of Obesity on Rising Medical Spending,” *Health Affairs*, Web Exclusive (October 2004), W4-480 – W4-486.

⁵ E.g., Hassink, S, “Problems in Childhood Obesity,” *Primary Care*, 30 (June 2003), 357–374; Deckelbaum, RJ and Williams, CL, “Childhood Obesity: The Health Issue,” *Obesity Research*, 9, Supplement (November 2001), 239S–243S.

⁶ The MCDB contains health care claims for services provided by physicians and other health care professionals to Maryland residents. These claims are submitted annually to the Maryland Health Care Commission by most private insurers operating in the State.

⁷ Some children have been given the diagnostic code of “morbidly obese,” but as noted above, the term “obese” for children has not been defined by medical professionals. Thus, the focus here is more precisely characterized as on payments on behalf of children with conditions related to *being overweight*.

⁸ Overweight-related conditions were identified from the published literature and recommendations from a consulting physician.

⁹ There are probably some children in the possibly overweight group that would have been identified as morbidly obese if they were treated by the providers who used that code for other children.

¹⁰ NCHS, *Ibid.*

¹¹ Thorpe, et al., *Ibid.*

¹² Morbid obesity is recognized as an adult condition, although the ICD-9 code for the condition is found in claim data for the under 18 population.

¹³ Most private payers offer weight control programs as a benefit to the enrollee, but no CPT-4 code exists for weight management.

Appendix: ICD-9 Codes Used to Identify Children as Possibly Overweight

CONDITION	CODE						
Paronychia - candidiasis of skin and nails	1123						
Diabetes Mellitus Type II	25000	25012	25030	25042	25060	25072	25090
	25002	25020	25032	25050	25062	25080	25092
	25010	25022	25040	25052	25070	25082	
Hyperinsulinemia	2511						
Polycystic ovarian syndrome	2564						
Dyslipidemia	2720	2721	2722	2724			
Dysmetabolic syndrome X	2777						
Obesity	27800						
Morbid Obesity	27801						
Pseudotumor cerebri	3482						
Essential Hypertension	4010	4011	4019				
Gallstones	57400	57411	57430	57441	57460	57471	57490
	57401	57420	57431	57450	57461	57480	57491
	57410	57421	57440	57451	57470	57481	
Acanthosis nigricans - acquired acanthosis nigricans	7012						